

hypoglycemic events as well as lower costs in treating major hypoglycemic events.

PDB21

COST-EFFECTIVENESS OF INSULIN DETEMIR COMPARED TO NPH INSULIN FOR TYPE 2 DIABETES MELLITUS (T2DM) IN THE CANADIAN PAYER SETTING: MODELING ANALYSIS USING AN OBSERVATIONAL STUDY

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OBJECTIVE: Insulin detemir represents a class of long-acting soluble insulin analogues intended to address basal insulin requirements for patients with diabetes. Because direct acquisition costs of newer medications are higher than older insulin treatments, payers are interested in their long-term value. This study was conducted to quantify the long-term cost-effectiveness of insulin detemir compared to intermediate-acting NPH insulin for the treatment of T2DM in Canada. **METHODS:** The CORE Diabetes Model was used to project lifetime clinical and economic outcomes for T2DM patients on insulin detemir versus NPH insulin. A slight advantage for insulin detemir in HbA1c (−0.18%) and significant reductions in major (93%) and minor (73%) hypoglycemic events were modeled. These clinical assumptions, as well as cohort characteristics (baseline age and HbA1c of 59 and 8.3%, respectively), transition probabilities, utilities, dis-utilities, direct treatment and complication costs (from a Canadian provincial payer perspective) were derived from recent published literature and on-line sources. Both clinical and economic outcomes were discounted at 5% per annum. **RESULTS:** Average total direct costs per patient were CAN\$74,227 for insulin detemir and CAN\$68,509 for NPH using a lifetime horizon. An 87% reduction in major hypoglycemic events costs for detemir (CAN\$289) vs. NPH (CAN\$2,244) were observed. Quality-adjusted life years (QALYs) increased by 0.304 years (discounted) with detemir and were largely due to decreased hypoglycemic events. The resulting incremental cost-effectiveness ratio (ICER) for detemir vs. NPH was CAN\$18,840/QALY. **CONCLUSION:** The ICER obtained in this analysis provides evidence for the long-term cost-effectiveness of insulin detemir compared to NPH in T2DM and is consistent with current Canadian standards. The overall value of detemir was driven primarily by its favorable impact upon hypoglycemic events as well as lower costs in treating major hypoglycemic events.

PDB22

COST-EFFECTIVENESS ANALYSIS OF CONTINUOUS SUBCUTANEOUS INSULIN INJECTION VS. MULTIPLE DAILY INJECTIONS IN TYPE 1 DIABETES PATIENTS: AN INTERNATIONAL COMPARISON

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OBJECTIVE: To review the projected long term costs and outcomes of continuous subcutaneous insulin infusion (CSII) compared with multiple daily injections (MDI) of insulin in adult type 1 diabetes mellitus (T1DM) patients in the USA, Canada (CAN), Australia (AUS), and the United Kingdom (UK). **METHODS:** A valid health economic model was used to determine the incremental cost-effectiveness ratio (ICER) of CSII compared with MDI among adult patients with T1DM for all four

countries. The primary input variable was change in HbA1c and was assumed to be a −1.2% improvement for CSII vs. MDI. A series of Markov constructs simulated the progression of diabetes-related complications. The average annual costs for CSII compared with MDI were locally derived (a 7–8 year pump life was assumed). The costs of optimal drug therapy, procedures and complications were derived from published federal and industry specific data. A 60-year time horizon was used for all analyses and a discount rate of either 3.0% (USA, UK) or 5.0% (CAN, Australia) per annum on costs and clinical outcomes were used. **RESULTS:** Treatment with CSII vs. MDI was associated with an improvement in quality-adjusted life years (QALYs) gained of 1.061, 0.655, 0.467 and 0.760 for adults in the USA, CAN, AUS and the UK, respectively. ICERs were USD\$16,992, CAN\$23,797, AUS\$74,147 and ≤25,648 per QALY gained for CSII vs. MDI in adults with T1DM. Improved glycemic control from CSII treatment led to a lower incidence of diabetes complications; most prominently for proliferative diabetic retinopathy, end stage renal disease and peripheral vascular disease. **CONCLUSION:** Setting the willingness to pay at the accepted level for each country (USD\$50,000/QALY, CAN\$50,000/QALY, AUS\$76,000/QALY and ≤30,000/QALY), the analyses demonstrated that CSII is a cost-effective treatment option for all four countries when compared to MDI for adult T1DM patients.

PDB23

COST-EFFECTIVENESS ANALYSIS OF CONTINUOUS SUBCUTANEOUS INSULIN INJECTION VS. MULTIPLE DAILY INJECTIONS IN TYPE 1 DIABETES PATIENTS: A CANADIAN PERSPECTIVE

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OBJECTIVE: To project long term costs and outcomes of continuous subcutaneous insulin infusion (CSII) compared with multiple daily injections (MDI) of insulin in adult type 1 diabetes mellitus (T1DM) patients in Canada. **METHODS:** A valid health economic model was used to determine the incremental cost-effectiveness ratio (ICER) of CSII compared with MDI among adult patients with T1DM from a Canadian provincial government perspective. The primary input variable was change in HbA1c. A series of Markov constructs simulated the progression of diabetes-related complications. The annual cost for CSII and MDI were CND \$6,347.18 and CND \$4,650.20, respectively. The cost of pump, procedures, complications, and optimal drug therapy were derived from Canadian-specific sources and other published data. A 60-year time horizon and a discount rate of 5.0% per annum on costs and clinical outcomes were used. **RESULTS:** Treatment with CSII was associated with an improvement in quality adjusted life expectancy of 0.655 vs. MDI. ICERs were CND\$27,264 per life-year and CND\$23,797 per quality-adjusted life year gained for CSII vs. MDI. Improved glycemic control from CSII treatment led to a lower incidence of diabetes complications. The cumulative incidence of proliferative diabetic retinopathy was reduced by 29% (relative risk [RR] = 0.706) with a number needed to treat (NNT) of ten patients. The cumulative incidence of end-stage renal disease (ESRD) was reduced by 20% (RR = 0.796) with a NNT of 21 patients. Finally, the findings for cardiovascular complications showed that the cumulative incidence of peripheral vascular disease was reduced by 16% (RR = 0.839); with a NNT of 46 patients. Setting the willingness to pay at ~CND\$27,000/LYG, the analysis demonstrated that CSII is cost-effective for adult patients with T1DM. **CONCLUSION:** This study shows that CSII is a cost-effective treatment option when compared to MDI in Canadian adults with T1DM.